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The German Biogas Sector – Status Quo and Prospects

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Virtuelle Energie-Geschäftsreise Dänemark

15 June 2021

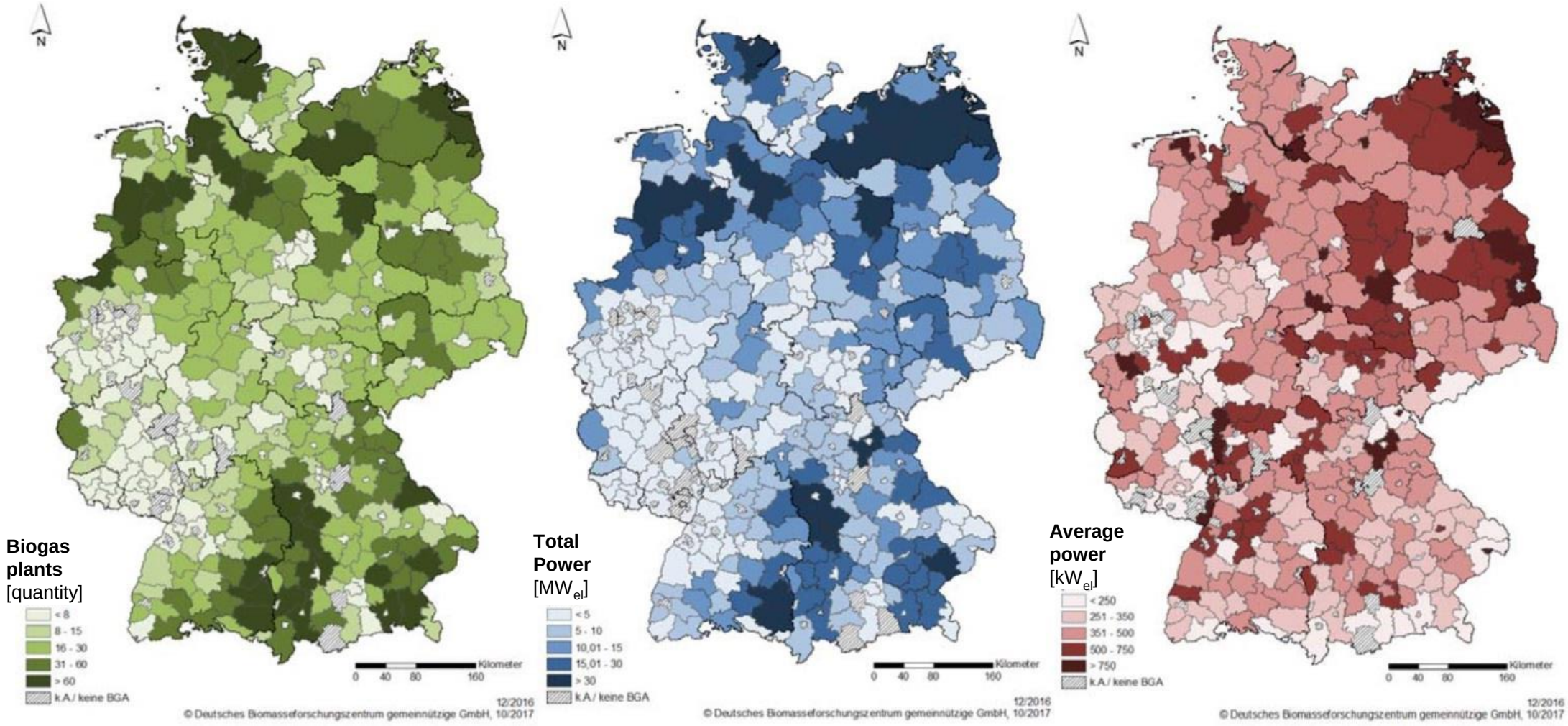
Facilitator

energie waechter

Content

I. Overview over the biogas sector development in Germany
II. Typical set-up of a German biogas plant, feedstock and energy use
III. Innovative project to become less dependent on financial support
IV. Conclusion

Biogas plants in Germany



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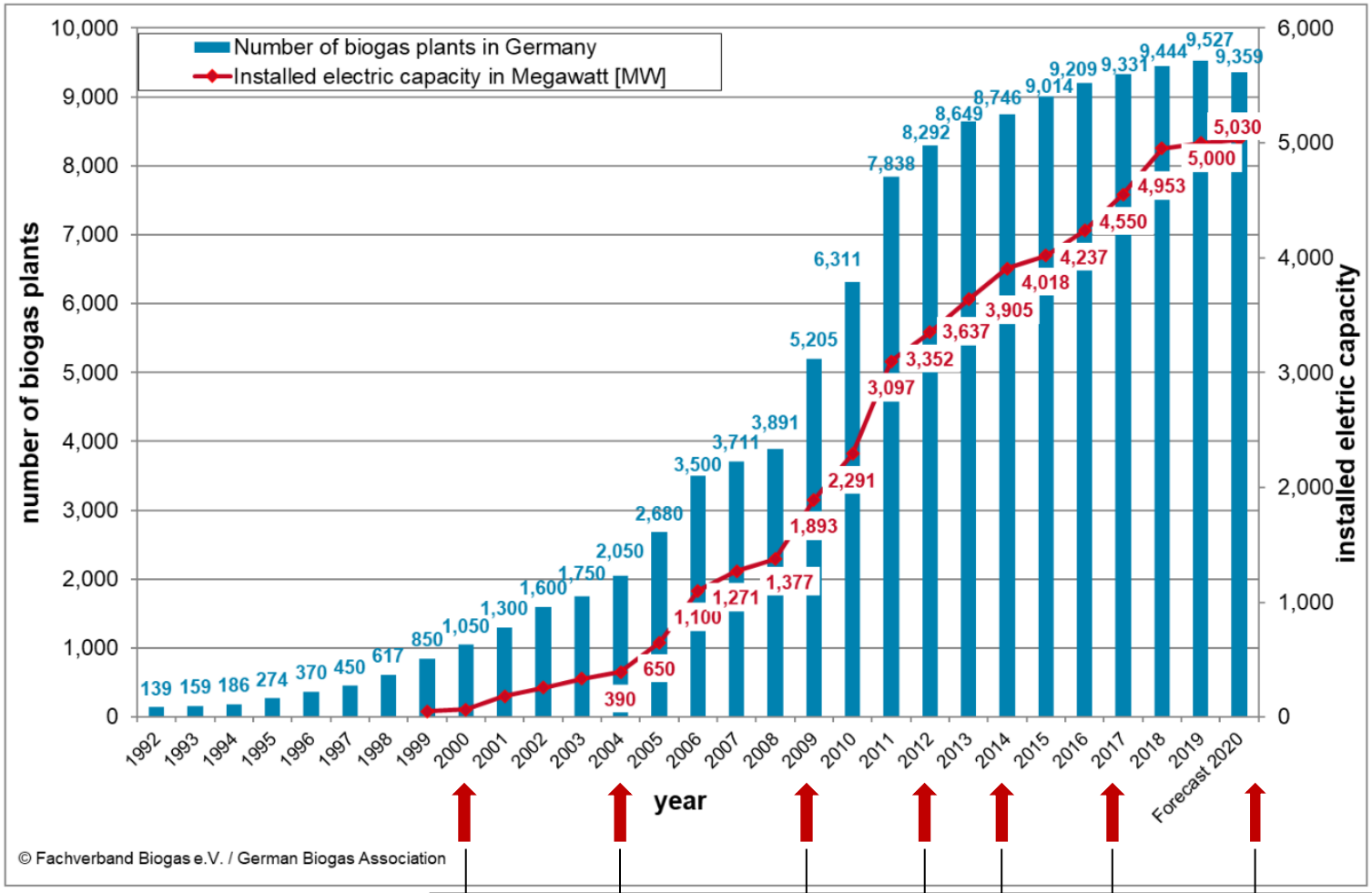
Source: Deutsches Biomasseforschungszentrum gGmbH, 10/2017

Development of biogas plants in Germany



Renewable Energy Sources Act (EEG) and amendments

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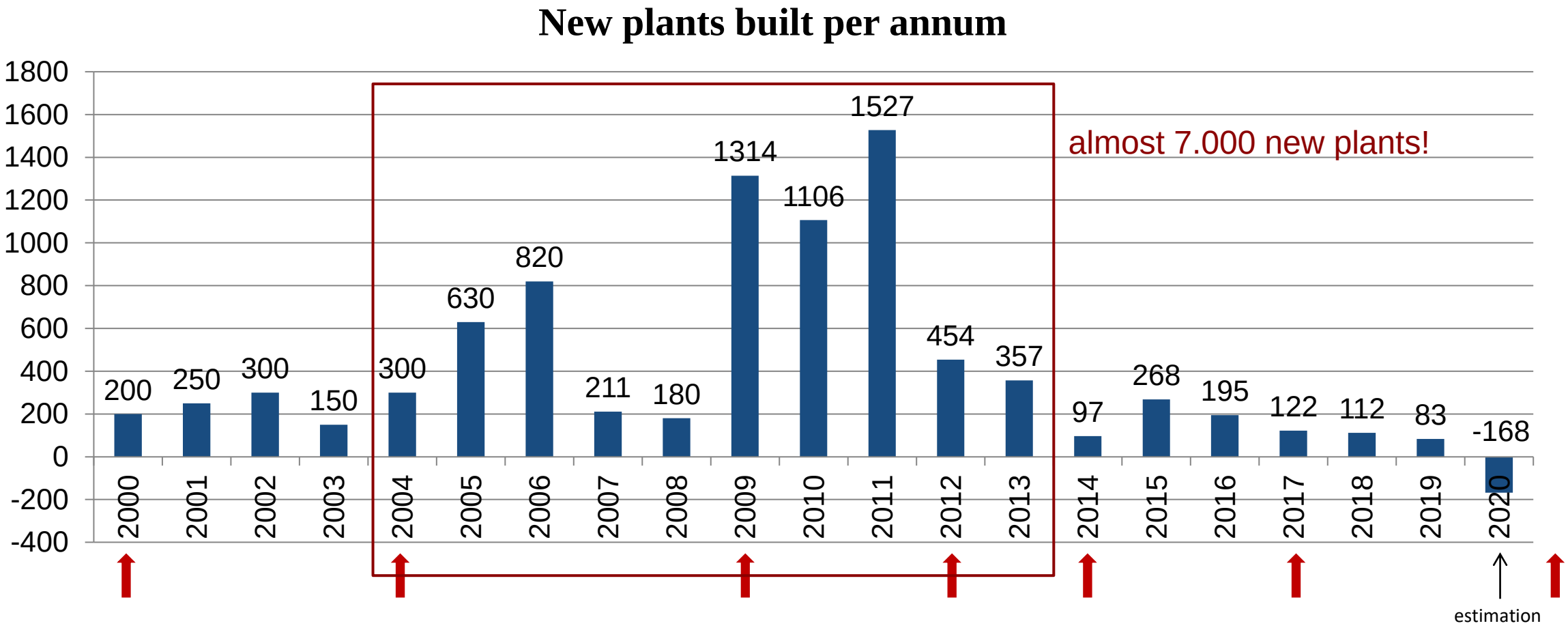
Development of biogas plants in Germany



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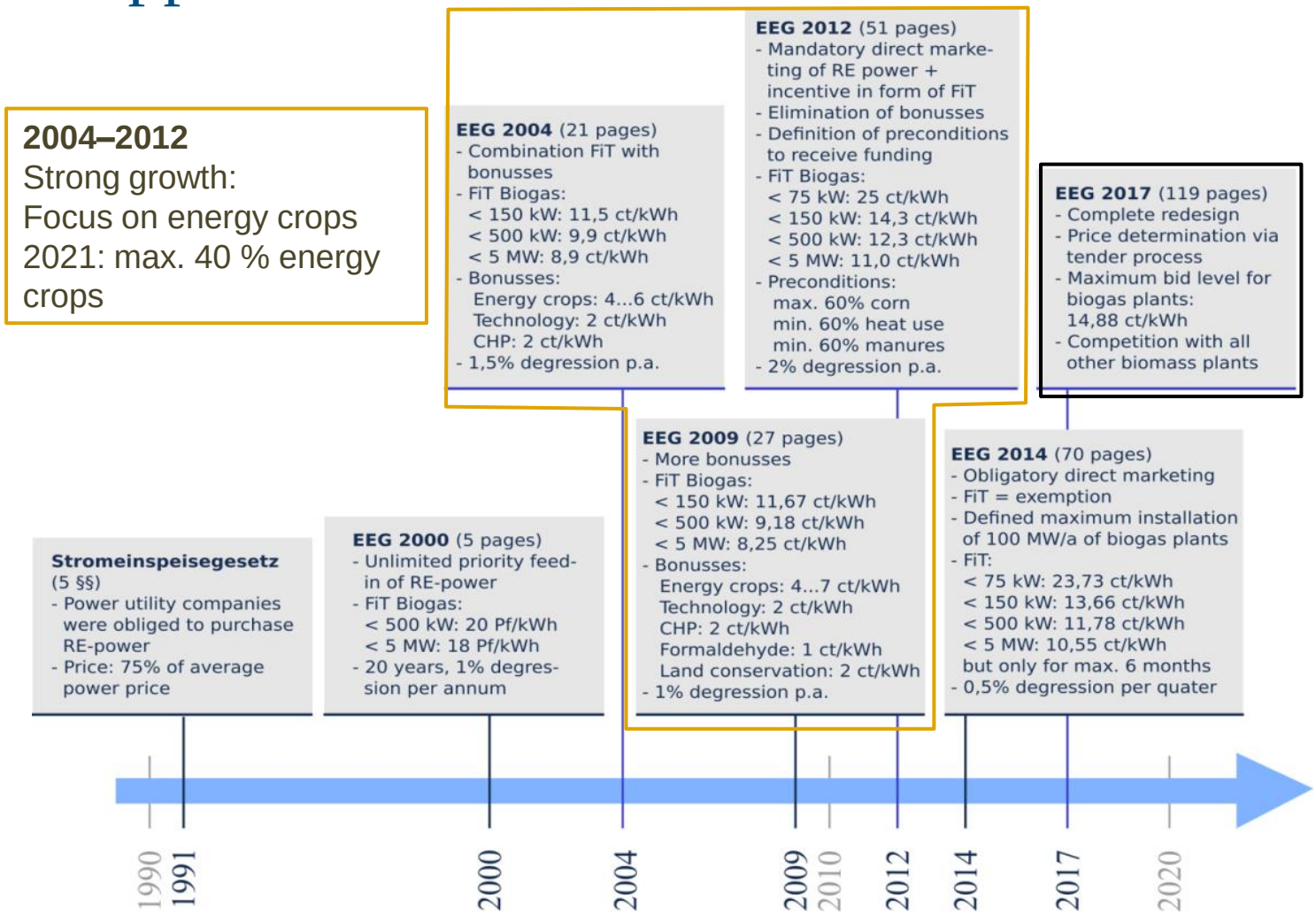
Own representation based on Fachverband Biogas e.V.

Financial support

2004–2012
Strong growth:
Focus on energy crops
2021: max. 40 % energy crops



Modification from beginning of **2017** and **2021**:

- Bidding system
- Only 45% of production is paid
- Maximum cap for 2017: 123 MW 2021: 600 MW, but 20% of top bids are not considered, if cap is not reached
- Only 80% manure plants have fixed feed-in tariff of 22.23 €cent up to 150 kW

Source: IBBK Fachgruppe Biogas GmbH

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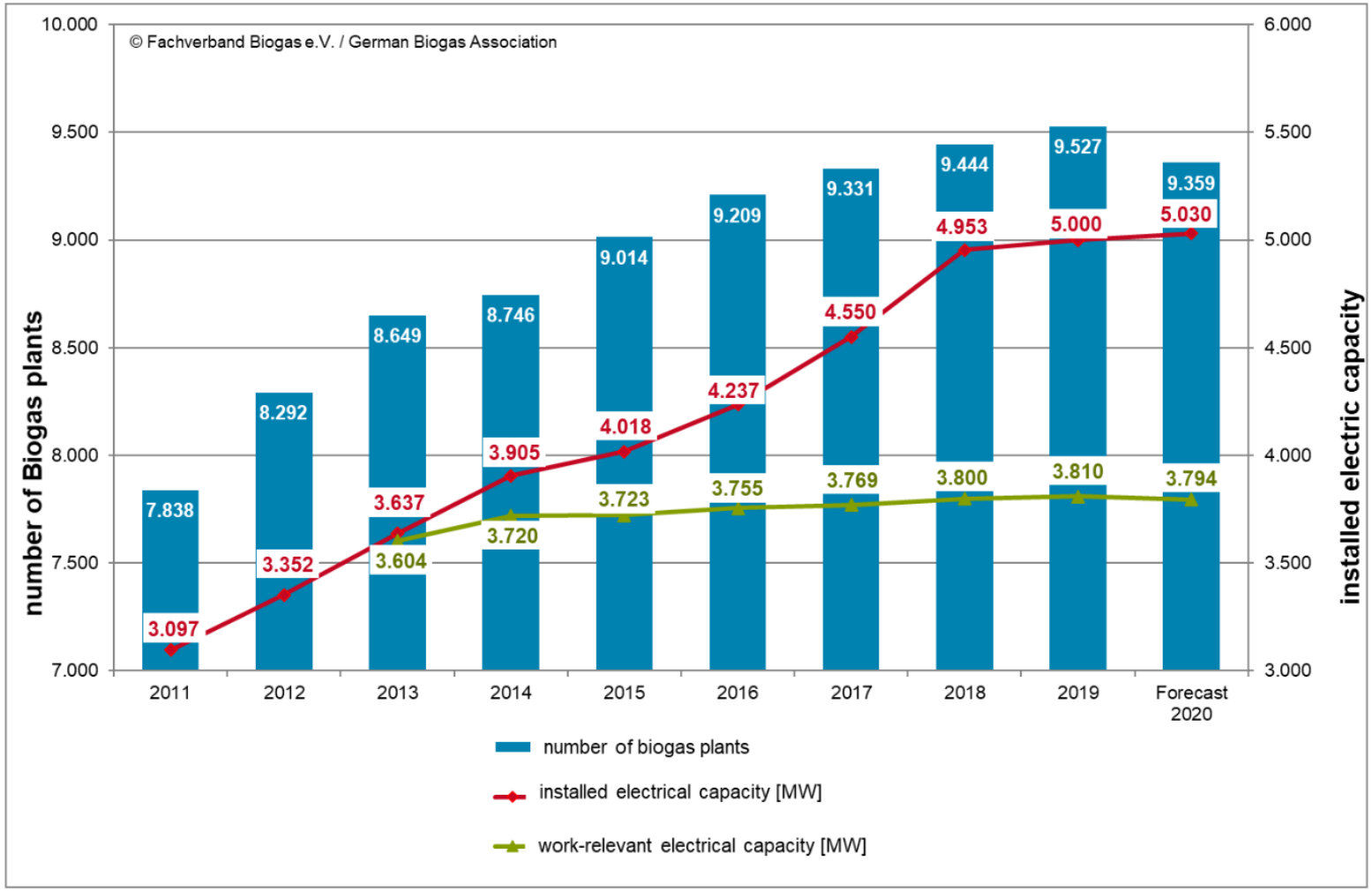
Recent development: flexible power production

Development of the number of biogas plants, installed electric capacity and the work relevant electric capacity per year in Germany

(as of 07/2020)



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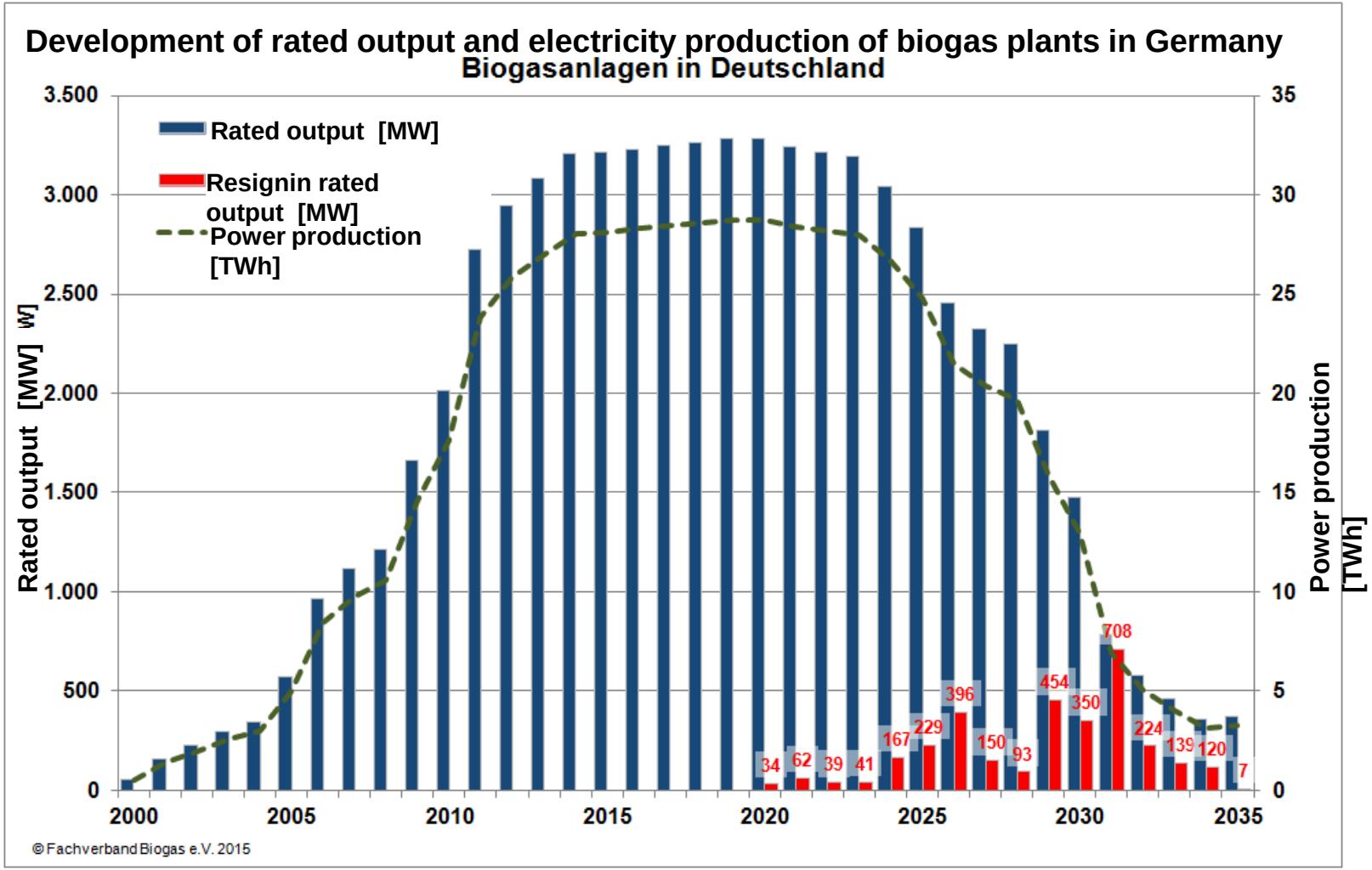
Outlook with remaining framework conditions

Development in the absence of or very unattractive financial support (as of 2015):



Many operators will stopp biogas production.

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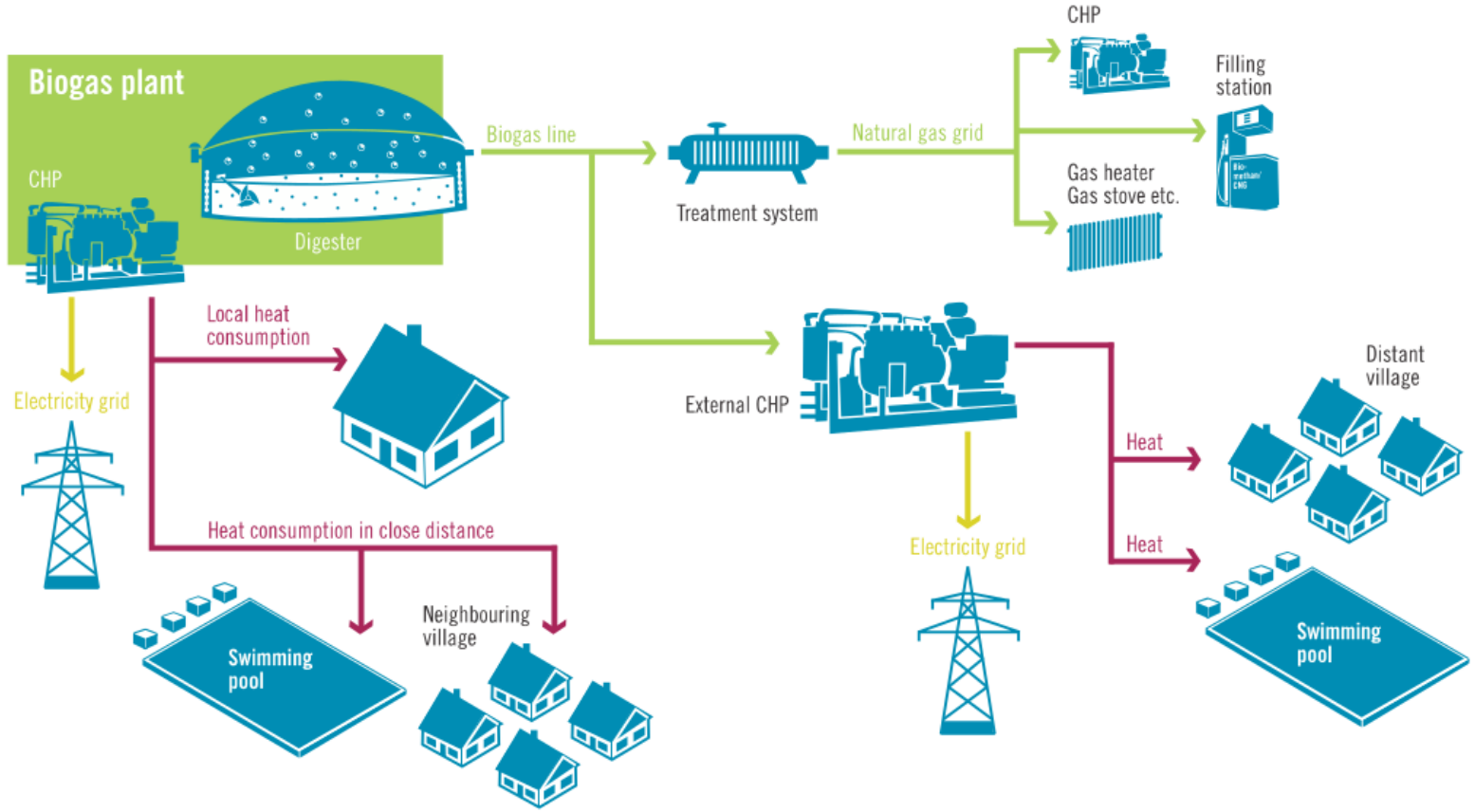
Traditional set-up of a German Biogas Plant

- Feeding System(s)
- Primary Digester(s)
- Secondary Digester(s)
- Storage Tank(s)
- Gas cleaning
- Combined Heat & Power Plant (~ 9.300)

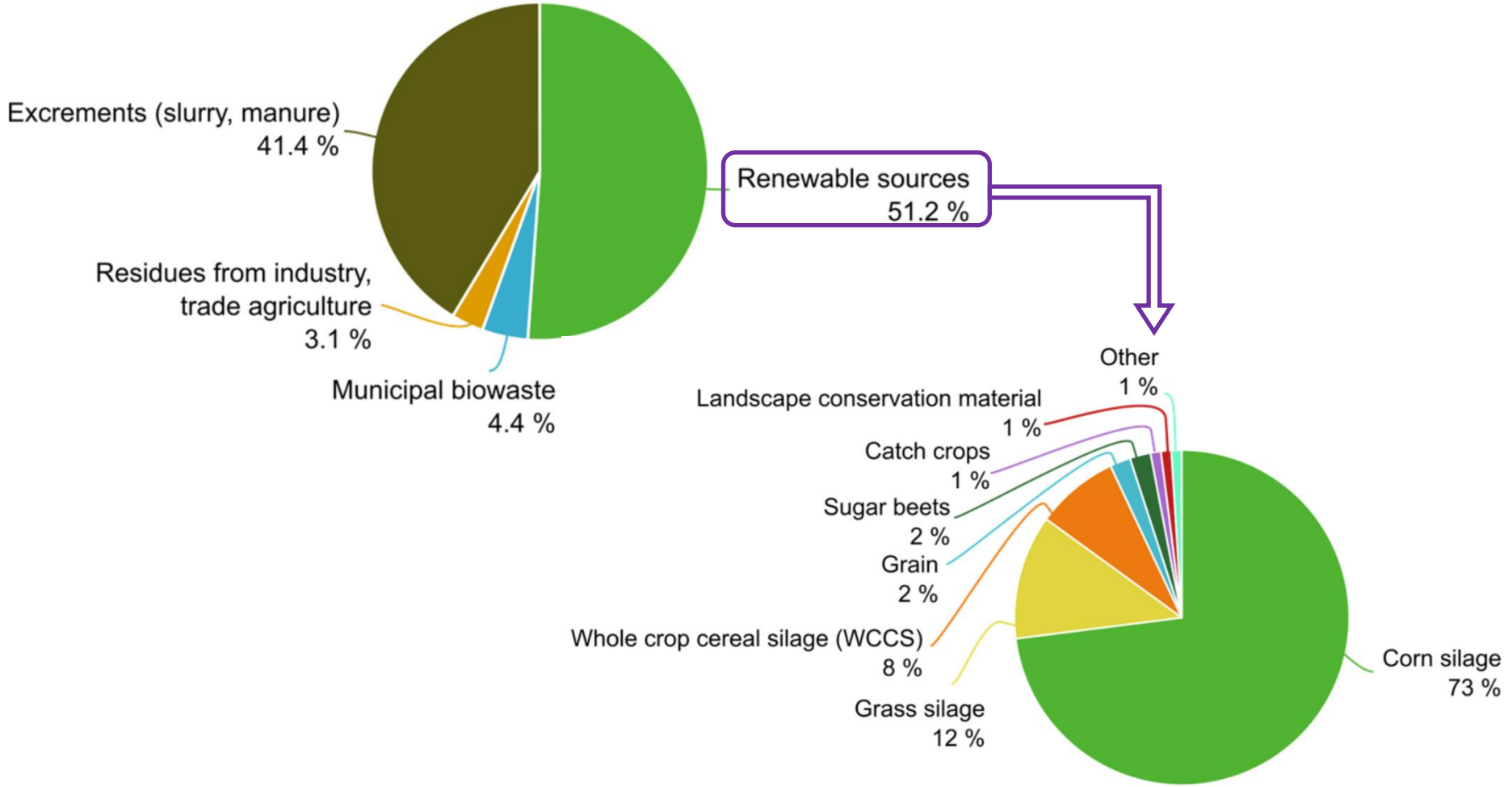
or

- Biomethane production (~ 232)



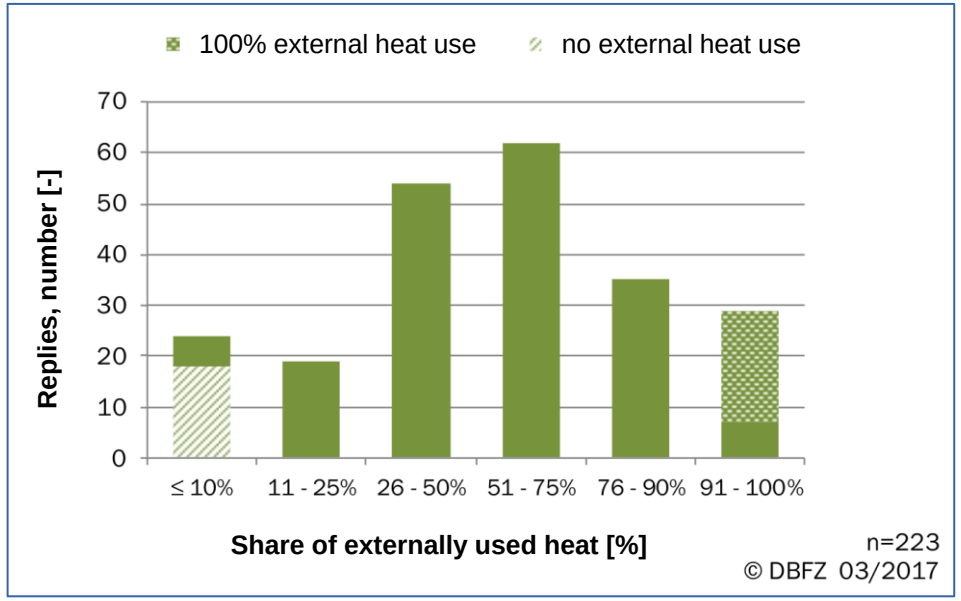
Source: Fachverband Biogas e.V.

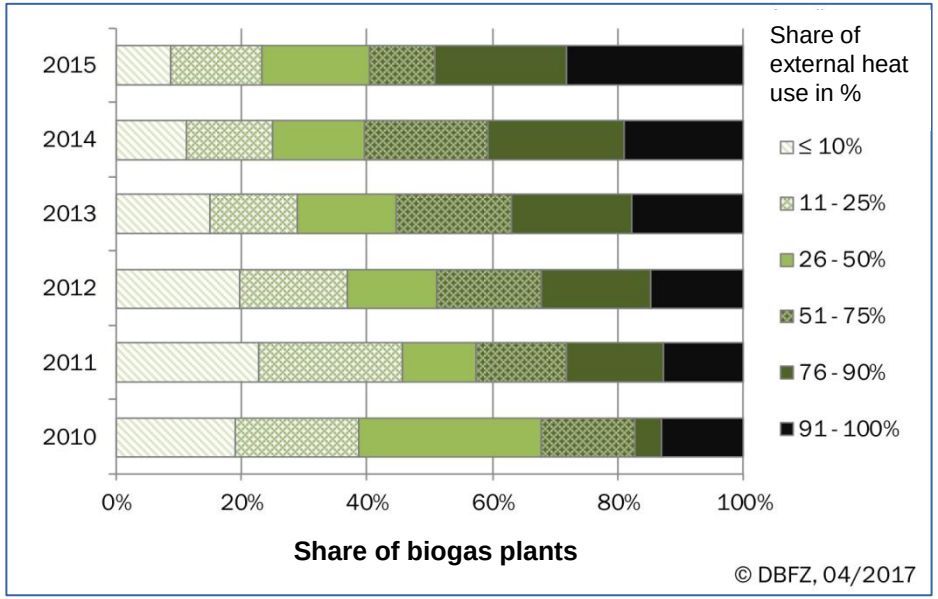
Feedstock for biogas production in Germany

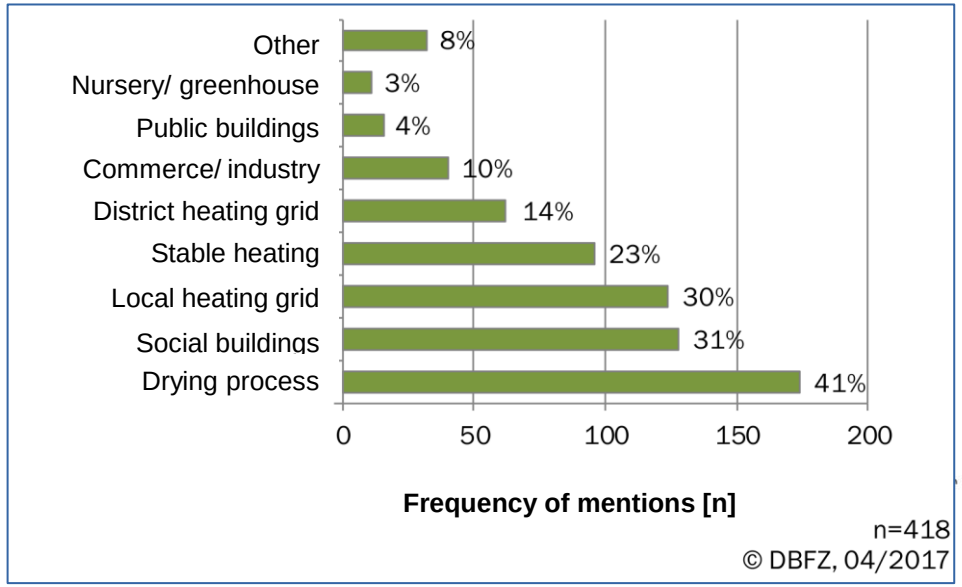


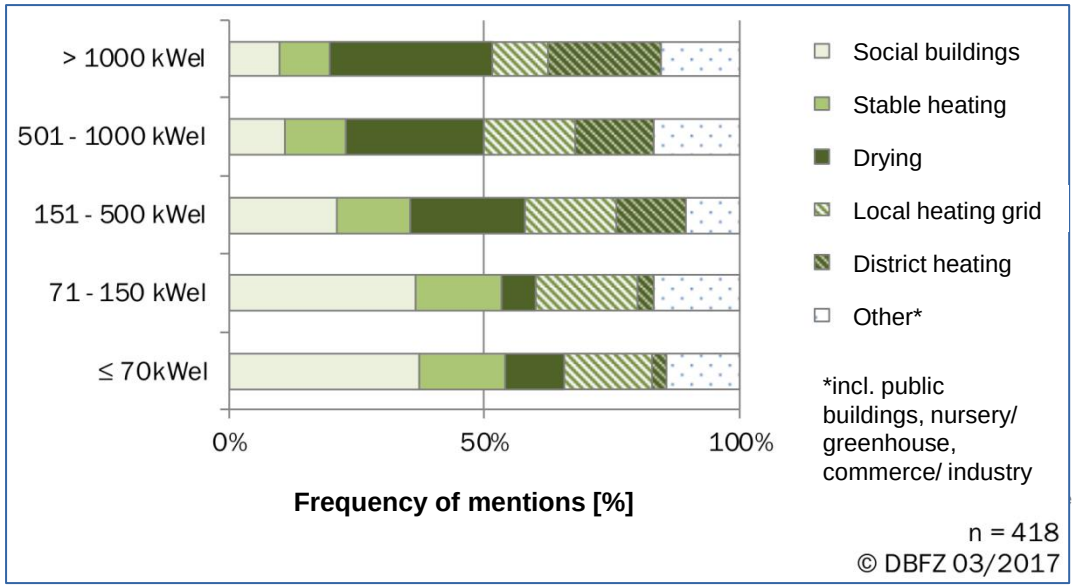
Source: DBFZ Betreiberbefragung Biogas 2016

Biogas for heat supply (external use)









Source: DBFZ Report 30, 2017

Innovation as key to success

Agro Energie Hohenlohe GmbH & Co. KG:

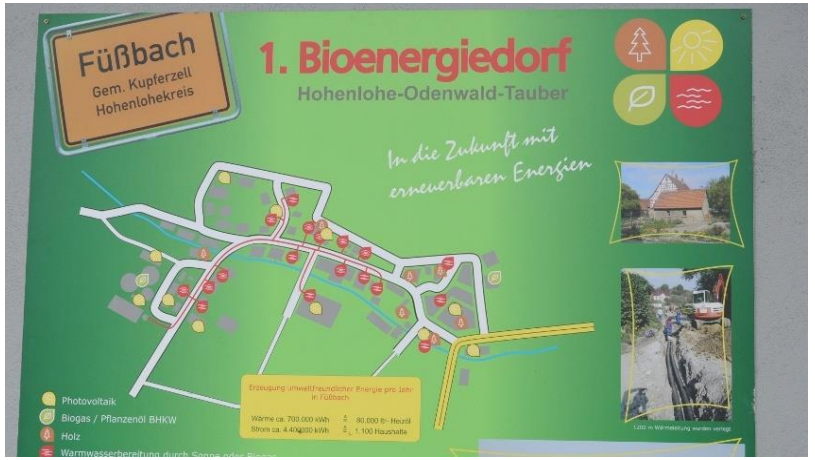
Picture credit (left to right): T. Karle/ https://www.nadu-naturduenger.de/; IBBK Fachgruppe Biogas GmbH

Agro Energie Hohenlohe – power and heat use

Main source of income: Feed in tariff

Further initiatives to become less dependent on financial support:

Drying processes (own & external)



Local district heating grid

Electric car sharing

Picture credits (left to right): IBBK, IBBK, http://xn--efssle-4ya.de/wp-content/uploads/2016/08/Flyer_EMobilit%C3%A4tstag.pdf

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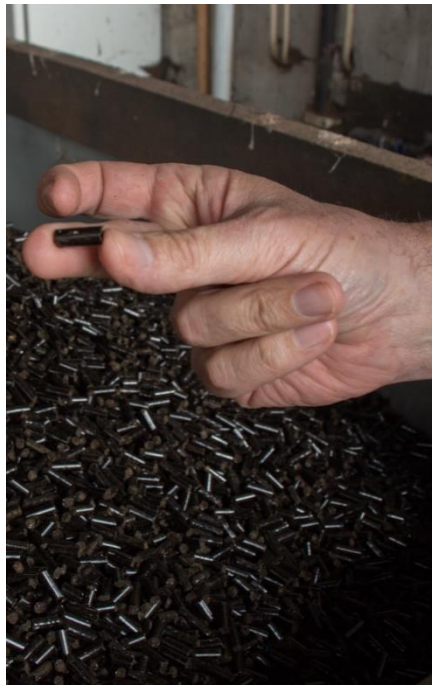
Agro Energie Hohenlohe – special fertiliser production

Permeate after membrane filtration

Ammonium-Sulphate-Solution (ASS)

Phosphate salt

Clean fibres (e.g. to substitute peat)



Fertiliser pellets from raw digestate

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Picture credits: IBBK Fachgruppe Biogas GmbH

Conclusion

- The biogas situation is changing due to the new national legislations
- Energy crops are becoming less economically feasible
- The focus will be on:
  - Different ways of marketing the AD products biogas (incl. heat) and digestate
  - Flexible production of electricity: the AD system is the only renewable solution to the flexibility issue of renewable energies
  - Biomethane as a biofuel for transportation and direct heating
  - AD technology as solution for manure and biowaste treatment

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Thank you for your attention!

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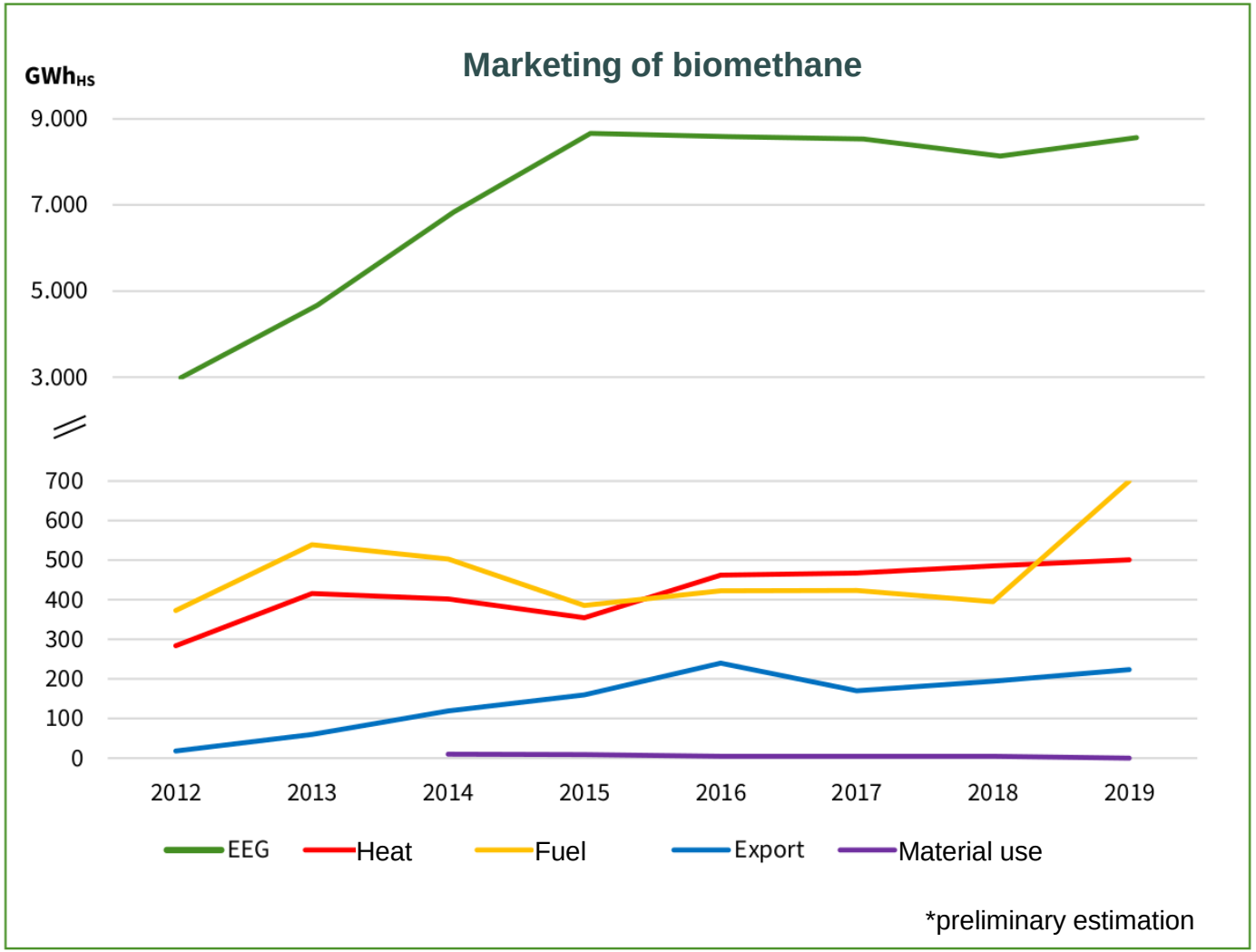
Biomethane use in Germany

Marketing of biomethane for different uses between 2012–2020 in Germany:



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